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ABSTRACT

How do size of communities and varying socioeconomic levels affect educational success? Is there a relationship between these factors and success in learning? This report is an attempt to look at National Assessment findings over the first four years, beginning in 1969 and ending in 1973. The National Assessment of Educational Progress is an information gathering project which surveys the educational attainments of 9, 13, 17 and 26 to 35-year olds in 10 learning areas. Data were gathered in the learning areas of science, citizenship and writing the first year; reading and literature the second year; social studies and music the third year; mathematics and science for the second time, the fourth year, or 1972-1973. In other words, change data were first reported in science and appeared in print in March 1975. Looking at results for the various sizes and types of communities (STOC groups) National Assessment considers in its reports, some evidence can be found of persistent patterns of educational attainment. The results in the area of reading are most indicative and underlie all other learning areas. Classification into type of community was based on occupation and place of residence, plus information about communities in which the respondents lived or attended school, but not about the individual. (Author/JM)

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A Statement of Fact: the Size and Type of a Community Bear Upon Educational Results

A Look at National Assessment Results in Eight Learning Areas in the Light of Community Influence

A Special Report to

URBAN SCHOOL DISTRICTS

UD015135

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FOREWORD

The National Assessment of Educational Progress (NAEP) is an information-gathering project which surveys the educational attainments of 9-year-olds, 13-year-olds, 17-year-olds and adults (ages 26—35) in 10 learning areas: art, career and occupational development, citizenship, literature, mathematics, music, reading, science, social studies and writing. Different learning areas are assessed every year, and all areas are periodically reassessed in order to measure educational change.

Each assessment is the product of several years work by a great many educators, scholars and lay persons from all over the country. Initially, these people design objectives for each area, proposing specific goals which they feel Americans should be achieving in the course of their education. After careful reviews, these objectives are then given to exercise (item) writers, whose task it is to create measurement tools appropriate to the objectives.

When the exercises have passed extensive reviews by subject-matter specialists and measurement experts, they are administered to probability samples from various age groups. The people who comprise these samples are chosen in such a way that the results of their assessment can be generalized to an entire national population. That is, on the basis of the performance of about 2,500 9-year-olds on a given exercise, we can generalize about the probable performance of all 9-year-olds in the nation.

Goals of the Assessment

National Assessment provides information to educational decisionmakers and practitioners that can be used to identify educational problem areas, to establish educational priorities and to determine the national progress in education. To do so, NAEP must remain flexible enough to accommodate possible extensions, refinements and modifications. The following goals have been established for the project by the National Assessment Policy Committee, the Analysis Advisory Committee and the NAEP staff.

Goal I: To measure change in the educational attainments of young Americans.

Goal II: To make available on a continuing basis comprehensive data on the educational attainments of young Americans.

Goal III: To utilize the capabilities of National Assessment to conduct special interest "probes" into selected areas of educational attainment.

Goal IV: To provide data, analyses and reports understandable to, interpretable by and responsive to the needs of a variety of audiences.

Goal V: To encourage and facilitate interpretive studies of NAEP data, thereby generating implications useful to educational practitioners and decisionmakers.

Goal VI: To facilitate the use of NAEP technology at state and local levels when appropriate.

Goal VII: To continue to develop, test and refine the technologies necessary for gathering and analyzing NAEP achievement data.

Goal VIII: To conduct an ongoing program of research and operational studies necessary for the resolution of problems and refinement of the NAEP model. (Implicit in this goal is the conduct of research to support previously mentioned goals.)

The National Assessment of Educational Progress also publishes a general information yearbook which describes all major aspects of the Assessment's operation. The reader who desires more detailed information about how NAEP defines its groups, prepares and scores its exercises, designs its samples and analyzes and reports its results should consult the *General Information Yearbook, Report 03/04-GIY.*

INTRODUCTION

What follows is an attempt to look at National Assessment findings over the first four years, beginning in 1969 and ending in 1973. Data were gathered in the learning areas of science, citizenship and writing the first year; reading and literature the second year; social studies and music the third year; mathematics and science, for the second time, the fourth year, or 1972–73. In other words, change data were first reported in science and appeared in print in March 1975.

How do size of communities and varying socioeconomic levels affect educational success? Is there a relationship between these factors and success in learning?

Looking at results for the various sizes and types of communities (STOC groups) National Assessment considers in its reports, we can find some evidence of persistent patterns of educational attainment. The results in the area of reading are most indicative and underlie all other learning areas.

MATH

Results for two types of communities—high metro and low metro—differed appreciably from national percentages in the math computation exercises. High metro areas are in or near large cities, and most of the adults in the community are in managerial or professional positions. Low metro areas are also in or near a large city, but a high proportion of the adults are on welfare or are not regularly employed. The high metro group performed consistently above the nation on almost all exercises at every age level with overall results approximately 6 to 8% above national levels. Overall results for the low metro group were 10 to 16 percentage points below the national levels, showing the greatest difference from the nation at age 13.

The high metro group performed consistently well on almost all the exercises at every age level. Overall results for the low metro group were below those for the nation on most exercises and were furthest below at age 13.

Two other types of communities, the extreme rural and the urban fringe, showed differences from the nation although not as substantial as for the above two community types. At ages 9, 13 and 17, the extreme rural group's performance was 1 to 3 percentage points below that of the nation, and the urban fringe performance was 2 to 5% above. Results for adults in these two groups were quite close to national results.

Performances of main big city, medium city and small place respondents were very similar to that of the nation for all ages.

Percentages of success on specific exercises for groups other than high and low metro did not follow any meaningful pattern of divergence from national percentages.

READING

There seems to be an obvious relationship between reading proficiency on the National Assessment reading exercises and the size and type of community that one's school serves. School-age young people from the extreme inner city group performed far below those in other size and type of community (STOC) groups, with the greatest difficulty being experienced by the 9-year-olds in that STOC category. In contrast, 9-, 13- and 17-year-olds from the extreme affluent suburb group were superior to all other STOC groups in their overall reading performance. Between those two extreme groups there was a wide range of performance by other STOC groups.

	Group	Percent Correct
Lowest:	Extreme inner city	37.0
	Extreme rural	46.0
	Small city	50.8
	Medium city	51.2
	Rest of big city	61.1
	Suburban fringe	62.1
Highest:	Extreme affluent suburb	66.5

The achievement levels are essentially the same for all three school-age groups. Because these STOC categories are partially related to family income, the reading success is somewhat associated with the respondents' parents' financial well-being.

The pattern of reading success for young adults is: adults from big cities read somewhat below the national average, adults from small places and medium cities read at about the national average and adults from urban fringes read somewhat above the national average.

These data identify where problems in performance exist. They do not explain why these problems exist.

A consistent pattern for STOC categories occurs throughout each of the eight themes in the 1970—71 reading assessment. The eight themes cluster the reading exercises according to content or some central idea. The themes are:

1. Understanding words and word relationships;
2. Graphic materials (read and interpret signs, charts, graphs, etc.);
3. Written directions (understand and carry out written directions);
4. Reference materials (know and use reference materials effectively);
5. Gleaning significant facts from passages;
6. Main ideas and organization (identify or discover the ideas and organization of a passage);
7. Drawing inferences (derive a conclusion not explicitly stated);
8. Critical reading (analysis and reasoning).

Percentages of respondents who correctly answered a particular exercise fall into a pattern of inner city lowest, affluent suburb highest and other groups step-by-step in between, with very few variations. A typical exercise asked students to look at a map of a small area and to decide if a certain highway runs between two towns. The following percentages of success occurred with 9-year-olds:

Group	Percent Correct
Extreme inner city	59.5
Extreme rural	79.7
Small city	81.9
Medium city	80.3
Rest of big city	83.3
Suburban fringe	86.4
Extreme affluent suburb	90.2

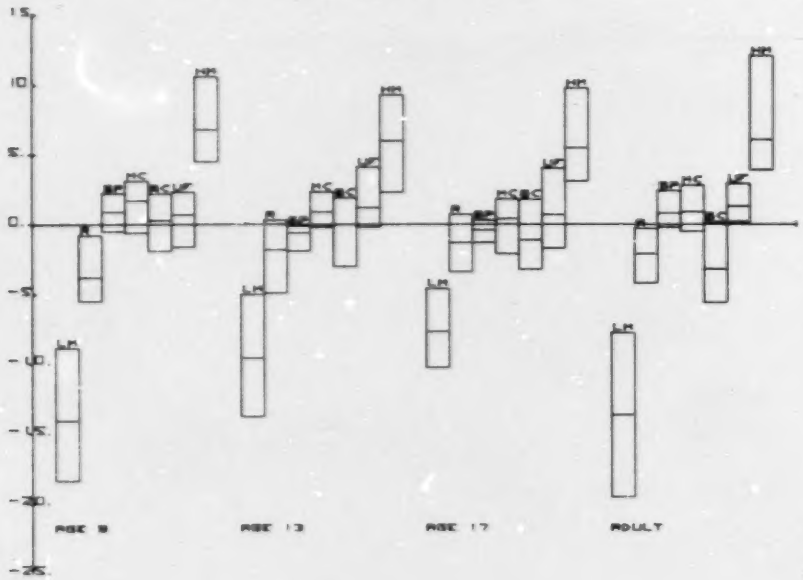
Similar patterns occurred throughout each of the four age levels.

The reading data suggest further that there is a relationship among low income, race and low reading performance. Only about 7% of the total sample in the reading assessment came from inner city schools, where high proportions of the residents were on welfare or not regularly employed. On the other hand, 44% of the black 9-year-olds compared to only 4% of all white 9-year-olds came from inner city schools. Thirty-one percent of the black 13-year-olds and 30% of the black 17-year-olds came from the inner city in contrast to 5% of whites at each of those age levels. While black performance is generally low, proportionately more black than white students came from inner city locations and seem to have suffered the consequences.

SOCIAL STUDIES

The social studies assessment, 1971—72, revealed political knowledge and attitudes of all age levels assessed: 9-, 13- and 17-year-olds and young adults. The performance levels of groups categorized as small places, medium city or main big city are at or very close to the national performance levels at all ages. The median difference for the rural group tended to fall increasingly below the national levels after age 9. By ages 17 and adult, more than three-fourths of the exercise differences are below the national level. In contrast to the rural group, the urban fringe tended to improve upon its relative performance after age 9. The performance levels for adults on more than three-fourths of the exercises were above the national levels. The differences from national performance for high and low metropolitan groups were the most extreme. High metro respondents performed well above the nation at all ages, while low metro performances were below national levels. (See the following graph.)

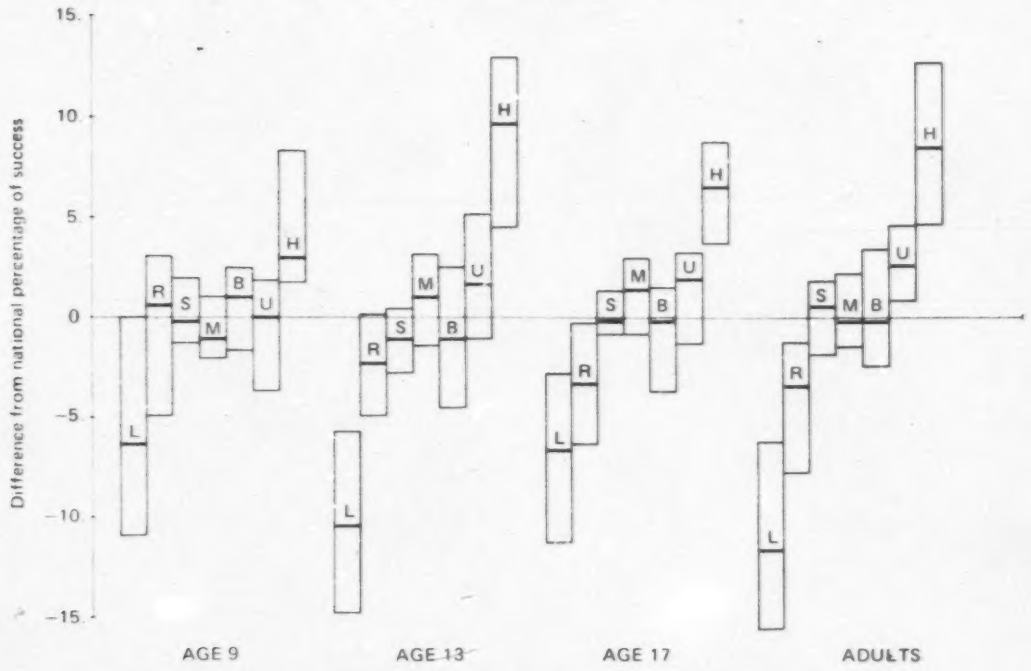
Skill Performance: Size and Type of Community (STOC) Results Compared to National Results



LM - Low metro
R - Extreme rural
SP - Small places
MC - Medium city
BC - Main big city
UF - Urban fringe
HM - High metro
□ - National level of performance
— - Median difference

The typical skill-performance patterns in social studies exhibit extremes of performance for the low and high metro respondents. The low metro group does considerably worse than the nation at all four ages, with a median difference ranging from 7% below the nation at age 17 to about 14% below the national populations at ages 9 and young adult. High metro respondents exhibit a consistent advantage at all four ages. Among the other groups, the differences are less extreme but generally maintain a pattern. For example, the median difference for rural respondents is from 1 to 4% below the nation at all ages. Respondents from medium cities and the urban fringe generally perform slightly above the national populations at all four age levels, while those from small places shift from having a median difference slightly above the nation at age 9 to one that is slightly below at ages 13 and 17. By adult measurements, this difference is once more above the national level. The main big city respondents tend to show an increasing disadvantage (relative to the nation) with age. The median difference for this group ranges from 1% above the nation at age 9 to about 4% below the nation at the adult level. (See the following graph.)

Political Knowledge and Attitudes: Performance of Size and Type of Community (STOC) Groups Compared to National Performance



L – Low metro
R – Extreme rural
S – Small place
M – Medium city
B – Main big city
U – Urban fringe
H – High metro
0 – National Level of Performance
— Median Difference

One recent report, *Contemporary Social Issues, Social Studies, Report 03-SS-02*, is a kind of reverse side of the coin of this present amalgam of results of learning areas according to the size and type of community from which respondents come. Instead of looking at the influence of the community on the skills, knowledge and attitudes of 9-, 13- and 17-year-olds and young adults, the report presents the views respondents have of contemporary society. The data tell us about how information is received, understood and transmitted in our society. There is an attempt to explore some of the issues of concern to young Americans, the problems of large cities, their causes and suggested remedies.

Since the report is geared to communities and their present conditions, I am enclosing it with this survey. It speaks for itself.

CITIZENSHIP

Data from the citizenship assessment of 1969—70 reveal similar differences within the seven community groups. The extreme affluent suburbs show substantial advantages at all ages; the extreme rural and extreme inner cities show substantial deficits. The remaining groups cluster in between these upper and lower extremes.

Groups that typically show deficits on all results combined do better on exercises calling upon common knowledge and experience and on exercises that focus on personal development and family concern. Results on individual exercises also show that while the extreme affluent suburbs usually do much better than the other two extreme groups, sometimes the extreme rural or extreme inner city groups depart from that pattern.

An example of atypical results exists in the cluster of exercises about knowledge of state and local government. Seventeen-year-olds and adults in the inner city and in the rural areas perform near or above the nation on exercises dealing with knowledge of local government, but they show large deficits on most exercises assessing knowledge of our federal government.

In the cluster of exercises about improving community through active, democratic participation, the results follow the typical pattern, except that 9-year-olds in the extreme inner city have a particularly large deficit of 19%. These 9-year-olds and those in the extreme rural group had larger deficits than 9-year-olds of other community types on questions regarding taking part in a civic project.

Behavior of 13- and 17-year-olds in a democratic group was observed by having groups work together to accomplish an assigned task. Typically about 40% more 17-year-olds in the extreme affluent suburb than in the extreme inner city or rest of big city groups stated a clear position on the issues and recommendations discussed.

SCIENCE, 1969 AND 1973

The percentage of rural students that could answer a typical science question correctly increased noticeably at all three ages between 1969 and 1973. Low metro areas are well below the nation and are not improving. At age 17, main big city students showed the greatest declines, dropping from just above the national level in 1969 to well below in 1973.

With special reference to questions relating to energy, we find some gains in 1973 over 1969 in correct responses. One specific item reveals that in 1973 9-year-olds in the low metropolitan, main big city and extreme rural areas showed large gains in a question to ascertain their fundamental grasp of the issues of electricity. Their age level in other types of communities showed declining performance.

When 13-year-olds answered an item concerning a basic understanding of the needs for energy, 3% more in the nation responded correctly in 1973 than in 1969. Notable among the groups that showed declines were the low metro 13-year-olds. The main big city and extreme rural groups showed the most dramatic gains.

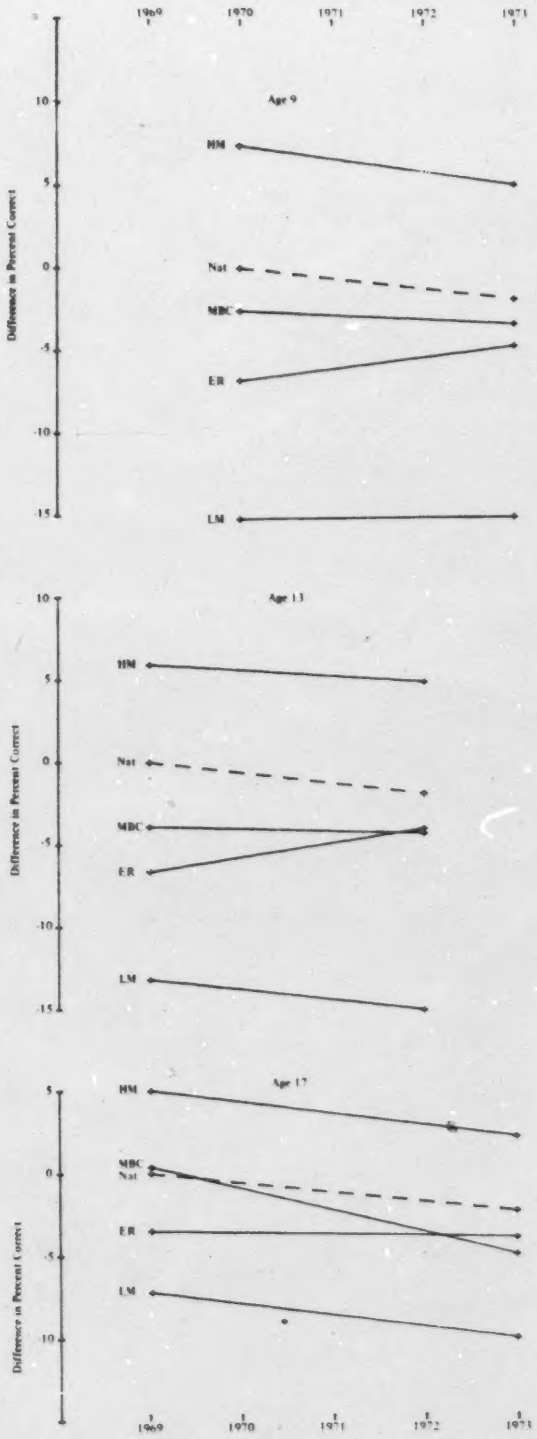
When 17-year-olds were asked to recognize a basic component in the chain between electric power and their use of it, 60% chose the correct answer in 1969 and only 47% did so in 1973. The greatest decline occurred within the main big city, while the low metro fell the least, from 1969 to 1973. The high metro and extreme rural respondents showed the most dramatic drop since both groups nationally were from 4 to 9% above the national average and from 5 to 9% below in 1973.

A substantial majority of 17-year-olds attending school realized the importance of knowing the environmental impact that would occur if a new energy plant were built.

The national percentage of 17-year-olds who realized the need to study environmental impact was approximately 76%. The extreme rural 17-year-olds surpassed that number up to 84%; the main big city, up to 79%; and the high metro, up to 77%. Only the low metro fell below at 70%.

High metro students at all three age levels continued to perform above the national level, although they are declining at about the same rate as the nation. (See the following graph.)

Average Changes in Performance for Selected Size and Type of Community (STOC) Groups at Ages 9, 13 and 17



The percentage of rural students that could answer a typical science question correctly increased noticeably at all three ages. Low metro areas are well below the nation and are not improving. At age 17, main big city students showed the greatest declines, dropping from just above the national level to well below. High metro students at all three age levels continued to perform above the national level, although they are declining at about the same rate as the nation.

KEY:

HM – High metro
MBC – Main big city
LM – Low metro
ER – Extreme rural

Typical performance of the urban fringe and medium size cities is always above that of the nation as a whole, while typical performance in smaller places and big cities is regularly below the nation.

Urban fringe 9- and 13-year-olds are similar, their typical performance being about 3% above the nation as a whole. The difference becomes greater for 17-year-olds and adults. The pattern for medium size cities shows a rise from 9 to 13% and a leveling from 13- to 17-year-olds to adult. The smaller places show a steady decline from 9-year-olds, who are approximately 1% below the national percentage, to adults, who are 4% below. In big cities, 9-, 17-year-olds and adults are similar in that they are 5% to 6% below the nation, but 13-year-old performance is only 3% below the national results.

In both essay and nonessay exercises, big city performance at all ages ranked anywhere from 2% to 10% below the national results. The opposite is true for students at all ages in the urban fringe group. These ranked consistently above: from approximately 2% to almost 6% above in both types of exercises. Respondents from medium size cities performed better than respondents from smaller places, with results slightly above the nation in almost every case for the former and from 2 to almost 6% below the nation for the latter, except in essay performance for 9-year-olds (2% above).

Usually, respondents from affluent suburbs and suburban fringe areas performed better than persons from other sizes and types of communities, followed by persons from medium and small cities. Rural respondents generally scored higher than those from the extreme inner city.

LITERATURE

The nationwide assessment in literature, 1970—71, is reported according to four themes and three major objectives. In Theme 1, Understanding Imaginative Language, the 9-, 13- and 17-year-olds of the extreme affluent suburb report consistently higher (from 5 to 7%) than the national percentages. The suburban fringe group also reports higher, but only from less than 1% to 3%. The small city respondents do less well, with 9-year-olds at slightly above the nation and 13- and 17-year-olds only slightly below. Respondents from medium cities and rest of big cities are generally less than 1% below the national results, with the exception of 9-year-olds who are very slightly above.

Extreme rural respondents in the same age levels rank from 3 to 5% below the nation, while the extreme inner city dips as far as 14% below for 9-year-olds and from 7 to 8% below for the two teenage groups.

Theme 2, Responding to Literature, required subjective—reflective and judgmental—responses in essay form and shows results only according to age. The responses were scored holistically, and many written responses were combined with verbal responses. Among them were very creative, even maverick, responses.

Theme 3, Recognizing Literary Works and Characters, convincingly indicates that respondents at all ages from the extreme affluent suburb group are more familiar with literature than any others assessed and performed consistently above the national level. Blacks and others in the extreme inner cities did unusually well in recognizing characters like Tom Sawyer, Achilles and John Henry but poorly on works such as *Alice in Wonderland*, *The Wizard of Oz* or *Charlotte's Web*.

The pattern continues for ranking of size and type of community (STOC) groups: the extreme affluent suburb is from 6 to almost 9% above the national percentages in all age levels; the extreme inner city, the extreme rural and the small city respondents at all age levels are below the nation, with extreme inner city falling as far as 12% below in the 9-year-old category.

Theme 4, A Survey of Reading Habits, showed results for the STOC groups as ranging from more than 3% below for 9-year-olds in the extreme inner city group to more than 3% above the nation for 17-year-olds in the extreme affluent suburb. Only the extreme rural group ranked consistently below the national percentage, but not quite so far as the extreme inner city at any age. Both medium city and suburban fringe were near the national results at ages 9, 13 and 17.

The results categorized by theme and again by objective indicate overall that the most active readers live or attend schools in the "fringe" areas around big cities, that is, in the suburbs.

MUSIC

In the music assessment, conducted in 1971—72, three community groups most often attained significant differences from the national level. Rural communities, where the majority of adults work on farms, and low metro communities, where the majority of adults are on welfare, tend to attain percentages lower than the national level. High metro communities, where the majority of adults are in professional or managerial positions, tend to attain percentages higher than the national level.

Groups generally performed as they have in previous assessments on those music exercises that involved notation and terminology, instrumental and vocal media or music history and literature—that is, the high metro group performed above the national level, while the rural and low metro groups performed below.

Differences by community type are not so large as in other learning areas assessed. The two most noticeable differences are the increased playing of instruments in the high metro areas and the increased participation in musical groups, especially vocal groups, in the rural areas. Other differences do not appear to be noteworthy.

Attitudes toward music show some reversals in the usual pattern within high and low metro groups. Low metro 13- and 17-year-olds rank far above the national percentage by almost 12% when asked if they listen to music on television at least weekly, whereas high metro respondents rank below the national value more than 13% for 17-year-olds and more than 16% for adults. The rural teenagers and adults are above the nation as far as 13% on the same question.

The results are almost reversed from those who listen to those who play at least one instrument—or, the general pattern once more emerges. Respondents at every age from the high metro communities rank above the national percentages as high as 8%. Respondents at every age from the low metro communities rank below as far as 11%. The rural respondents also dip below at every age, particularly at age 13.

Few students belong to an instrumental group even nationally, but 13-year-olds from rural areas far surpass any other age level (10% above the national level) and are followed by high metro age 9 respondents.

Once again, many low metro and rural groups rank below the national percentages, with an occasional surprise indicating that the kids and adults are still turned on and tuned into music.

CONCLUSION

The relationship between sizes of communities and socioeconomic conditions to success in learning is partially answered in the findings presented here. Are there other factors, such as parental level of education or color/culture, which predict answers? In many instances these factors, and thereby the answer to the question, impinge upon and follow from the results set down here. Further research on the National Assessment survey would reveal succinct and definitive replies to the questions posed.

Occupational Categories

Categories	Code
Professional or managerial personnel	A
Sales, clerical, technical or skilled workers	B
Factory or other blue collar workers	C
Farm workers	D
Not regularly employed	E
On welfare	F

National Assessment Size and Type of Community (STOC) Reporting Categories

Reporting Category	Occupational Index	Description
Low metro	E+F-A	Sample schools or segments in a city or metropolitan area of a city with a population greater than 150,000 and in the 90–99th percentile of the low metro index
Extreme rural	D-(C+2A)	Sample schools or segments in communities with a population less than 8,000 and in the 90–99th percentile of the extreme rural index
Small place		Sample schools or segments in a community with a population less than 25,000 and not classified as extreme rural
Medium city		Sample schools or segments in a city with a population between 25,000 and 200,000 and not classified as low metro or high metro
Main big city		Sample schools or segments within the city limits of a city with a population greater than 200,000 and not classified as high metro or low metro
Urban fringe		Sample schools or segments in the metropolitan area of a big city but outside the city limits and not classified as low metro, extreme rural or high metro
High metro	A-(C+D+E+F)	Sample schools or segments in a city or metropolitan area of a city with a population greater than 150,000 and in the 90–99th percentile on the high metro index

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Distribution of Respondents by Size and Type of Community (STOC) and Age Level

STOC Category	Age Level					
	9	13	17 (IS)*	17 (OS)†	17 (All)	Adult
1. Low metro	10.2%	9.9%	11.3%	14.0%	11.7%	9.9%
2. Extreme rural	10.0	9.6	11.8	9.8	11.6	10.2
3. Small place	32.4	33.7	33.0	33.4	33.1	31.8
4. Medium city	16.8	16.6	15.9	19.9	16.3	13.7
5. Main big city	10.5	11.2	9.3	6.4	9.0	8.0
6. Urban fringe	10.0	8.4	5.1	7.7	5.4	16.4
7. High metro	10.1	10.7	13.6	8.9	13.0	10.0

**In-school*
†Out-of-school

APPENDIX

For the years 1969 through 1972, National Assessment reported four sizes of communities (SOC) that depended on population. They are: (1) big cities (BC)—central cities with 200,000 or greater inhabitants, (2) urban fringe (UF)—each county containing a big city—the region of the county or counties not in the BC limits but within the same Standard Metro Statistical Area (SMSA), (3) medium size cities (MC)—all SMSA counties not included in BC or fringes and containing at least one city of 25,000 or more, (4) small places (SP)—all counties and combinations of counties with a population under 25,000 not included in the foregoing.

During the same period, socioeconomic differences were analyzed indicating gradations of performances. These were defined as inner city, suburb, rural and remainder, with considerations of the extremes in the inner city and rural communities.

The classification into type of community (TOC) was based on occupation and place of residence, plus information about communities in which the respondents lived or attended school, but not about the individual.

So, by mid-1972, results were being reported in the following size and type of community (STOC) categories: extreme affluent suburb, suburban fringe, medium city, rest of big city, small city, extreme rural and extreme inner city.

But greater refinement was needed even within these categories so that results reported from December 1973 until NAEP's most recent report on science change in March of 1975, and predictably throughout 1975, are comprised of three "extreme" types of community (TOC) and four "residual" sizes of community (SOC). Each TOC category includes approximately 10% of the respondents at each age level; the remaining respondents are classified according to one of the SOC classifications.

Briefly, the three TOC categories are: (1) city areas where a high proportion of the adult population is either not regularly employed or on welfare and a low proportion is employed in professional or managerial positions; (2) rural areas where a high proportion of adults are farm workers and a low proportion are professional, managerial or factory workers; and (3) near-city and city areas where a high proportion of adults are employed in professional or managerial positions and a low proportion are factory or farm workers, not regularly employed or on welfare. Respondents are placed in one of these categories of the occupational profile and location of the school, or, in the case of the out-of-school sample, segments satisfy the extreme TOC definitions.

The remaining respondents at each age level are classified according to the size of community in which the school or segment is located. The school principal supplies National Assessment with estimates of the percentage of students whose parents fit into each occupational category. Occupational data for the out-of-school sample are obtained from census data and from the respondents themselves.

The foregoing explanations of the sizes and types of communities, making up the categories into which National Assessment data fall, serve as background for the results reported on each of the learning areas assessed throughout the United States.